

MEMORANDUM

TO: Mr. Terry Taylor
Anderson, Mulholland and Associates

DATE: April 15, 2013

FROM: R. Infante
RE: Data Validation
BMSMC, Building 5 Area, PR
SM04.00.06

FILE: JB29717(R)
JB30082(R)
JB30345(R)
JB30252(R)

Accutest Job Numbers: JB29717; JB29717r; JB30082; JB30082r; JB30252; JB30252r; JB30345; JB30345r

Reviewed by: RO
4/19/2013
checked by IT
4/22/13

SUMMARY

Full validation was performed on the data for ten (10) soil samples analyzed selected volatile organic compound by method SW846-8260B an selected alcohols (methanol and isopropylalcohol) by method SW846-8015C DAI. The samples were collected at the Building 5 Area, Humacao, PR site From February 23 to March 3, 2013 and submitted to Accutest Laboratories of Dayton, New Jersey that analyzed and reported the results under delivery groups (SDG): JB29717; JB29717r; JB30082; JB30082r; JB30252; JB30252r; JB30345; JB30345r.

The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: "USEPA Region 2, SOP HW-24, Validating Volatile Organic Compounds by GC/MS, SW-846 Method 8260B (August 2009-Revision 2), the USEPA National Functional Guidelines for Low Concentration Organic Data Review (August 2009-Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August 2009-Revision 3); (noted herein as the "primary guidance documents"). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update IV, December 1998)," are utilized. The guidelines were modified to accommodate the non-CLP methodology. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

In general the data are valid as reported and may be used for decision making purposes. The data results are acceptable for use; some of the results were qualified. Result Isopropyl alcohol in samples JB29717-1R; JB29717-2R; and JB29717-3R were rejected (R) due samples analyzed after the holding time limits. Result for acetone rejected (R), calibration check over method criteria. Results for methanol and isopropyl alcohol in the other samples were estimated (J) due to samples analyzed after holding time limits. Results for acetone estimated (J) in sample JB30345-1, calibration check over method criteria. Results for acetone estimated (J) in sample JB30252-1, MS/MSD outside control limits.

SAMPLES

The samples included in the review are listed below

FIELD SAMPLE ID	LABORATORY ID	DATE	ANALYSIS
AREAEC10_BOT	JB29717-1	02/23/13	VOCs
AREAEC11_BOT	JB29717-2	02/23/13	VOCs
AREAEC6_BOT	JB29717-3	02/25/13	VOCs
AREAEC10_BOT	JB29717-1R	02/23/13	ALCOHOLS

FIELD SAMPLE ID	LABORATORY ID	DATE	ANALYSIS
AREAEC11_BOT	JB29717-2R	02/23/13	ALCOHOLS
AREAEC6_BOT	JB29717-3R	02/25/13	ALCOHOLS
AREAEC_9BOT	JB30082-1	02/27/13	VOCs
AREAEC_12BOT	JB30082-2	02/27/13	VOCs
AREAEC_12BOT MSD	JB30082-2D	02/27/13	VOCs
AREAEC_12BOT MS	JB30082-2S	02/27/13	VOCs
AREAEC_13BOT	JB30082-3	02/28/13	VOCs
AREAEC_9BOT	JB30082-1R	02/27/13	ALCOHOLS
AREAEC_12BOT	JB30082-2R	02/27/13	ALCOHOLS
AREAEC_12BOT MSD	JB30082-2RD	02/27/13	ALCOHOLS
AREAEC_12BOT MS	JB30082-2RS	02/27/13	ALCOHOLS
AREAEC_13BOT	JB30082-3R	02/28/13	ALCOHOLS
AREAEC_14BOT	JB30252-1	03/01/13	VOCs
AREAEC_14BOT	JB30252-1R	03/01/13	ALCOHOLS
AREAEC_14BOT	JB30345-1	03/02/13	VOCs
AREAEC_14BOT	JB30345-1R	03/02/13	ALCOHOLS

REVIEW ELEMENTS

Sample data were reviewed for the following parameters, where applicable to the method

- Agreement of analysis conducted with chain of custody (COC) form
- Holding time and sample preservation
- Gas chromatography/mass spectrometry (GC/MS) tunes
- Initial and continuing calibrations
- Method blanks/trip blanks/field blank
- Surrogate spike recovery
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Internal standard performance
- Field duplicate results
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Quantitation limits and sample results

DISCUSSION

Agreement of Analysis Conducted with COC Request

Sample reports corresponded to the analytical request designated on the chain-of-custody form.

Holding Times and Sample Preservation

The cooler temperatures were within the QC acceptance criteria of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

Sample preservation was acceptable.

Samples analyzed within method recommended holding time except for the followings:

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
JB29717-1R	02/23/13	03/20/13	-	1
JB29717-2R	02/23/13	03/20/13	-	
JB29717-3R	02/25/13	03/20/13	-	
JB30082-1R	02/27/13	03/20/13	-	2
JB30082-2R	02/28/13	03/20/13	-	
JB30082-3R	02/28/13	03/20/13	-	
JB30082-2RMSD	02/28/13	03/20/13	-	
JB30082-2RMS	02/28/13	03/20/13	-	
JB30252-1R	03/01/13	03/20/13	-	
JB30345-1R	03/02/13	03/20/13	-	
1. The sample analyzed < 28 days after 7 days holding time expiration. Positive results estimated (J), nondetects are rejected (R).				
2. The sample analyzed < 14 days after 7 days holding time expiration. Positive results and nondetects are estimated (J).				

GC/MS Tunes

The frequency and abundance of bromofluorobenzene (BFB) tunes were within the QC acceptance criteria. All samples were analyzed within the tuning criteria associated with the method.

Initial and Continuing Calibrations

VOCs

The percent relative standard deviations (%RSDs) and response factors (RFs) of all target analytes were within the QC acceptance criteria in the initial calibration. Correlation coefficients (r^2) of target analytes were within the QC acceptance criteria. Ongoing accuracy of the instrument was determined by the analysis of a continuing calibration standard. Initial and continuing calibration meets method performance criteria except for the following:

- Continuing calibration % difference outside method control limits for acetone for the 02/08/13 calibration check; - 56.1 %. Results for acetone rejected (R) in sample JB30082-1.
- Continuing calibration % difference outside method control limits for acetone for the 03/12/13 calibration check; - 20.7 %. Results for acetone estimated in sample JB30345-1.

Alcohols

The percent relative standard deviations (%RSDs) and response factors (RFs) of all target analytes were within the QC acceptance criteria in the initial calibration and continuing calibration in at least one of the two signals.

Method Blank/Trip Blank/Field Blank

Target analytes were not detected in laboratory method blanks for VOCs and alcohols.

No field/trip/equipment blanks analyzed with this data package.

Surrogate Spike Recovery

The surrogate recoveries were within the laboratory QC acceptance limits in all samples analyzed.

MS/MSD

VOCs

Matrix spike was performed on samples JB30582-38MS/-38MSD; JB30041-2MS/-2MSD; JB30109-9MS/-9MSD; JB30082-2MS/-2MSD; JB30950-2MS/-2MSD; and JB30917-2MS/-2MSD. Recoveries for MS/MSD and RPD were within laboratory control limits except for the followings:

- Acetone recovery outside control limits in JB30041-2MS/-MSD; no action taken due to high sample concentration relative to amount spiked.
- Acetone recovery and RPD outside control limits in JB30181-14MS/-MSD; no action taken due to high sample concentration relative to amount spiked.
- MIBK MS/MSD RPD outside control limits in JB30181-14MS/-MSD; no action taken due to high sample concentration relative to amount spiked.
- Acetone recovery outside control limits in JB30109-9MS/-MSD; no action taken due to high sample concentration relative to amount spiked.
- Acetone recovery and RPD outside control limits in JB30082-2MS/-MSD; no action taken due matrix interferences.
- Acetone recovery outside control limits in JB30950-2MS/-MSD; results for acetone qualified as estimated in sample JB30252-1.

Alcohols

Matrix spike was performed on samples JB30082-2RMS/-2RMSD. Recoveries for MS/MSD were within laboratory control limits; RPD for MS/MSD were within control limits.

Internal Standard Performance

VOCs

Samples were spiked with the method specified internal standard. Internal standard performance met the QC acceptance criteria in all sample analyses.

Field Duplicate Results

Field duplicate not analyzed as part of this data set. Laboratory duplicates for VOC were samples JB30586-36/JB30586-36 DUP. RPD results were within laboratory/recommended control limits except for the followings:

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Toluene	0.12	ND	0.31	200	No action taken; low concentration of hit

No field/laboratory duplicates analyzed for alcohols.

When field/laboratory samples were not reported with the data package MS/MSD RPD was used to assess precision. RPD within laboratory and generally acceptable control limits.

LCS/LCSD Results

VOCs

The laboratory analyzed one LCS (blank spike) associated with each matrix from this data set. The % recoveries of all spiked analytes were within the laboratory QC acceptance limits.

Alcohols

The laboratory analyzed one LCS (blank spike) associated with each matrix from this data set. The % recoveries of all spiked analytes were within the laboratory QC acceptance limits.

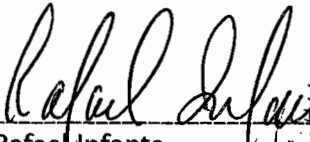
Quantitation Limits and Sample Results

Dilutions were required with this data set.

Calculations were spot checked.

Certification

The following samples JB29717-1; JB29717-2; JB29717-3; JB29717-1R; JB29717-2R; JB29717-3R; JB30082-1; JB30082-2; JB30082-2D; JB30082-2S; JB30082-3; JB30082-1R; JB30082-2R; JB30082-2RD; JB30082-R2S; JB30082-3R; JB30252-1; JB30252-1R; JB30345-1; and JB30245-1R were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. Some of the results were qualified. The results are valid except the alcohol results that were rejected.


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Report of Analysis

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Client Sample ID: AREAEC10_BOT
Lab Sample ID: JB29717-1
Matrix: SO - Soil
Method: SW846 8260B SW846 5035
Project: BMSMC, Building 5 Area, PR

Date Sampled: 02/23/13
Date Received: 02/26/13
Percent Solids: 90.2

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X133720.D	1	03/07/13	MS	02/26/13 14:00	n/a	VX5796
Run #2							

	Initial Weight
Run #1	4.8 g
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	48.1	12	2.0	ug/kg	
71-43-2	Benzene	1.8	1.2	0.14	ug/kg	
100-41-4	Ethylbenzene	2.6	1.2	0.30	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	5.4	5.8	0.87	ug/kg	J
108-88-3	Toluene	0.27	1.2	0.12	ug/kg	J
1330-20-7	Xylene (total)	11.2	1.2	0.16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		70-130%
17060-07-0	1,2-Dichloroethane-D4	86%		70-122%
2037-26-5	Toluene-D8	97%		81-127%
460-00-4	4-Bromofluorobenzene	96%		66-132%



ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

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Client Sample ID: AREAEC11_BOT
 Lab Sample ID: JB29717-2
 Matrix: SO - Soil
 Method: SW846 8260B SW846 5035
 Project: BMSMC, Building 5 Area, PR

Date Sampled: 02/23/13
 Date Received: 02/26/13
 Percent Solids: 89.1

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	D206079.D	1	03/04/13	ET	02/26/13 14:00	n/a	VD8406
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.5 g	5.0 ml	100 ul
Run #2			

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	161	680	120	ug/kg	J
71-43-2	Benzene	ND	68	8.1	ug/kg	
100-41-4	Ethylbenzene	683	68	18	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	224	340	51	ug/kg	J
108-88-3	Toluene	ND	68	7.2	ug/kg	
1330-20-7	Xylene (total)	1710	68	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		70-130%
17060-07-0	1,2-Dichloroethane-D4	90%		70-122%
2037-26-5	Toluene-D8	97%		81-127%
460-00-4	4-Bromofluorobenzene	92%		66-132%

(a) Diluted due to high concentration of target compound.



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Client Sample ID:	AREAEC6_BOT	Date Sampled:	02/25/13
Lab Sample ID:	JB29717-3	Date Received:	02/26/13
Matrix:	SO - Soil	Percent Solids:	87.9
Method:	SW846 8260B SW846 5035		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y131655.D	1	03/05/13	RS	02/26/13 14:00	n/a	VY5667
Run #2							

Run #	Initial Weight
Run #1	5.0 g
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	71.2	11	1.9	ug/kg	
71-43-2	Benzene	1.9	1.1	0.14	ug/kg	
100-41-4	Ethylbenzene	2.4	1.1	0.30	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	15.7	5.7	0.85	ug/kg	
108-88-3	Toluene	0.50	1.1	0.12	ug/kg	J
1330-20-7	Xylene (total)	10.4	1.1	0.16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-130%
17060-07-0	1,2-Dichloroethane-D4	83%		70-122%
2037-26-5	Toluene-D8	109%		81-127%
460-00-4	4-Bromofluorobenzene	93%		66-132%



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 N = Indicates presumptive evidence of a compound

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Report of Analysis

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Client Sample ID: AREAEC10_BOT
 Lab Sample ID: JB29717-1R
 Matrix: SO - Soil
 Method: SW846-8015C (DAI)
 Project: BMSMC, Building 5 Area, PR

Date Sampled: 02/23/13
 Date Received: 02/26/13
 Percent Solids: 90.2

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GH92246.D	1	03/20/13	XPL	n/a	n/a	GGH4267
Run #2							

Run #	Initial Weight
Run #1	5.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0	Isopropyl Alcohol	ND	2	110	52	ug/kg
67-56-1	Methanol	14100	3	220	53	ug/kg

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	91%		58-133%
111-27-3	Hexanol	92%		58-133%

(a) Sample analyzed outside the holding time per client's request.



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Client Sample ID: AREAEC11_BOT
Lab Sample ID: JB29717-2R
Matrix: SO - Soil
Method: SW846-8015C (DAI)
Project: BMSMC, Building 5 Area, PR

Date Sampled: 02/23/13
Date Received: 02/26/13
Percent Solids: 89.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GH92247.D	1	03/20/13	XPL	n/a	n/a	GGH4267
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0	Isopropyl Alcohol	ND $\frac{1}{2}$	110	52	ug/kg	
67-56-1	Methanol	19700 $\frac{1}{2}$	220	54	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	89%		58-133%
111-27-3	Hexanol	72%		58-133%

(a) Sample analyzed outside the holding time per client's request.



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Client Sample ID:	AREAEC6_BOT	Date Sampled:	02/25/13
Lab Sample ID:	JB29717-3R	Date Received:	02/26/13
Matrix:	SO - Soil	Percent Solids:	87.9
Method:	SW846-8015C (DAI)		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GH92248.D	1	03/20/13	XPL	n/a	n/a	GGH4267
Run #2							

Run #	Initial Weight
Run #1	5.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0	Isopropyl Alcohol	ND	110	53	ug/kg	
67-56-1	Methanol	18700	230	54	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	93%		58-133%
111-27-3	Hexanol	72%		58-133%

(a) Sample analyzed outside the holding time per client's request.



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Client Sample ID:	AREAEC_9BOT	Date Sampled:	02/27/13
Lab Sample ID:	JB30082-1	Date Received:	03/01/13
Matrix:	SO - Soil	Percent Solids:	86.6
Method:	SW846 8260B SW846 5035		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A192404.D	1	03/08/13	OTR	03/01/13 12:00	n/a	VA7246
Run #2							

Run #	Initial Weight
Run #1	5.1 g
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND <i>L</i>	11	1.9	ug/kg	
71-43-2	Benzene	2.8	1.1	0.13	ug/kg	
100-41-4	Ethylbenzene	33.0	1.1	0.30	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.7	0.85	ug/kg	
108-88-3	Toluene	0.34	1.1	0.12	ug/kg	J
1330-20-7	Xylene (total)	115	1.1	0.16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		70-130%
17060-07-0	1,2-Dichloroethane-D4	87%		70-122%
2037-26-5	Toluene-D8	109%		81-127%
460-00-4	4-Bromofluorobenzene	109%		66-132%



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Client Sample ID: AREAEC_12BOT
 Lab Sample ID: JB30082-2
 Matrix: SO - Soil
 Method: SW846 8260B SW846 5035
 Project: BSMC, Building 5 Area, PR

Date Sampled: 02/28/13
 Date Received: 03/01/13
 Percent Solids: 86.5

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A192477.D	1	03/11/13	OTR	03/01/13 12:00	n/a	VA7248
Run #2							

Run #	Initial Weight
Run #1	4.6 g
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	189	13	2.1	ug/kg	
71-43-2	Benzene	1.6	1.3	0.15	ug/kg	
100-41-4	Ethylbenzene	1.0	1.3	0.33	ug/kg	J
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.3	0.94	ug/kg	
108-88-3	Toluene	ND	1.3	0.13	ug/kg	
1330-20-7	Xylene (total)	3.8	1.3	0.17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		70-130%
17060-07-0	1,2-Dichloroethane-D4	90%		70-122%
2037-26-5	Toluene-D8	108%		81-127%
460-00-4	4-Bromofluorobenzene	110%		66-132%



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Client Sample ID: AREAEC_13BOT
 Lab Sample ID: JB30082-3
 Matrix: SO - Soil
 Method: SW846 8260B SW846 5035
 Project: BSMC, Building 5 Area, PR

Date Sampled: 02/28/13
 Date Received: 03/01/13
 Percent Solids: 75.8

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A192478.D	1	03/11/13	OTR	03/01/13 12:00	n/a	VA7248
Run #2							

Run #	Initial Weight
Run #1	5.0 g
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	60.6	13	2.2	ug/kg	
71-43-2	Benzene	1.7	1.3	0.16	ug/kg	
100-41-4	Ethylbenzene	13.5	1.3	0.35	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.6	0.99	ug/kg	
108-88-3	Toluene	ND	1.3	0.14	ug/kg	
1330-20-7	Xylene (total)	54.3	1.3	0.18	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		70-130%
17060-07-0	1,2-Dichloroethane-D4	91%		70-122%
2037-26-5	Toluene-D8	109%		81-127%
460-00-4	4-Bromofluorobenzene	108%		66-132%



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Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: JB30082

Account: AMANYWP Anderson, Mulholland & Associates

Project: BMSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB30082-2MS	A192474.D	1	03/11/13	OTR	n/a	n/a	VA7248
JB30082-2MSD	A192475.D	1	03/11/13	OTR	n/a	n/a	VA7248
JB30082-2	A192477.D	1	03/11/13	OTR	n/a	n/a	VA7248

The QC reported here applies to the following samples:

Method: SW846 8260B

JB30082-2, JB30082-3

CAS No.	Compound	JB30082-2 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	189		60.2	163	-43* ^a	102	-148* ^a	46* ^b	10-198/35
71-43-2	Benzene	1.6		60.2	61.4	99	60.6	100	1	44-130/21
100-41-4	Ethylbenzene	1.0	J	60.2	61.5	100	60.7	101	1	29-137/25
108-10-1	4-Methyl-2-pentanone(MIBK)	ND		60.2	71.7	119	65.8	112	9	39-143/22
108-88-3	Toluene	ND		60.2	61.7	102	61.5	104	0	40-135/22
1330-20-7	Xylene (total)	3.8		181	184	100	181	100	2	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB30082-2	Limits
1868-53-7	Dibromofluoromethane	105%	102%	104%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	83%	90%	70-122%
2037-26-5	Toluene-D8	108%	109%	108%	81-127%
460-00-4	4-Bromofluorobenzene	101%	99%	110%	66-132%

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Outside control limits due to matrix interference.



* = Outside of Control Limits.

Accutest LabLink@723561 11:14 08-Apr-2013

Report of Analysis

Page 1 of 1

Client Sample ID: AREAEC_9BOT
 Lab Sample ID: JB30082-1R
 Matrix: SO - Soil
 Method: SW846-8015C (DAI)
 Project: BMSMC, Building 5 Area, PR

Date Sampled: 02/27/13
 Date Received: 03/01/13
 Percent Solids: 86.6

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH92241.D	1	03/20/13	XPL	n/a	n/a	GGH4267
Run #2							

Run #	Initial Weight
Run #1	5.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0	Isopropyl Alcohol	ND J	120	54	ug/kg	
67-56-1	Methanol ^b	560 J	230	55	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	93%		58-133%
111-27-3	Hexanol	98%		58-133%

(a) Sample analyzed outside the holding time per client's request.

(b) More than 40 % RPD for detected concentrations between the two GC columns.



ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest LabLink@723561 11:14 08-Apr-2013

Report of Analysis

Page 1 of 1

Client Sample ID: AREAEC_12BOT
 Lab Sample ID: JB30082-2R
 Matrix: SO - Soil
 Method: SW846-8015C (DAI)
 Project: BMSMC, Building 5 Area, PR

Date Sampled: 02/28/13
 Date Received: 03/01/13
 Percent Solids: 86.5

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH92242.D	1	03/20/13	XPL	n/a	n/a	GGH4267
Run #2							

Run #	Initial Weight
Run #1	5.3 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0	Isopropyl Alcohol	ND J	110	51	ug/kg	
67-56-1	Methanol	ND J	220	52	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	93%		58-133%
111-27-3	Hexanol	70%		58-133%

(a) Sample analyzed outside the holding time per client's request.



ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest LabLink@723561 11:14 08-Apr-2013

Report of Analysis

Page 1 of 1

Client Sample ID: AREAEC_13BOT
 Lab Sample ID: JB30082-3R
 Matrix: SO - Soil
 Method: SW846-8015C (DAI)
 Project: BMSMC, Building 5 Area, PR

Date Sampled: 02/28/13
 Date Received: 03/01/13
 Percent Solids: 75.8

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH92243.D	1	03/20/13	XPL	n/a	n/a	GGH4267
Run #2							

Run #	Initial Weight
Run #1	5.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0	Isopropyl Alcohol	ND J	130	61	ug/kg	
67-56-1	Methanol ^b	1020 J	260	63	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	93%		58-133%
111-27-3	Hexanol	95%		58-133%

(a) Sample analyzed outside the holding time per client's request.

(b) More than 40 % RPD for detected concentrations between the two GC columns



ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB30082R

Account: AMANYWP Anderson, Mulholland & Associates

Project: BSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB30082-2RMS ^a	GH92244.D	1	03/20/13	XPL	n/a	n/a	GGH4267
JB30082-2RMSD ^a	GH92245.D	1	03/20/13	XPL	n/a	n/a	GGH4267
JB30082-2R ^a	GH92242.D	1	03/20/13	XPL	n/a	n/a	GGH4267

The QC reported here applies to the following samples:

Method: SW846-8015C (DAI)

JB30082-1R, JB30082-2R, JB30082-3R

CAS No.	Compound	JB30082-2R ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-63-0	Isopropyl Alcohol	ND	J	5450	5570	102	5620	103	1	54-142/24
67-56-1	Methanol	ND	J	5450	5580	102	5330	98	5	44-146/19

CAS No.	Surrogate Recoveries	MS	MSD	JB30082-2R	Limits
111-27-3	Hexanol	94%	93%	93%	58-133%
111-27-3	Hexanol	68%	118%	70%	58-133%

(a) Sample analyzed outside the holding time per client's request.



* = Outside of Control Limits.

Accutest LabLink@719626 09:04 20-Mar-2013

Report of Analysis

Page 1 of 1

Client Sample ID:	AREAD-14BOT	Date Sampled:	03/01/13
Lab Sample ID:	JB30252-1	Date Received:	03/02/13
Matrix:	SO - Soil	Percent Solids:	74.6
Method:	SW846 8260B SW846 5035		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y131939.D	1	03/13/13	RS	03/02/13 15:00	n/a	VY5679
Run #2							

Run #	Initial Weight
Run #1	5.4 g
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	42.9 J	12	2.1	ug/kg	
71-43-2	Benzene	0.80	1.2	0.15	ug/kg	J
100-41-4	Ethylbenzene	12.0	1.2	0.33	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	92.8	6.2	0.93	ug/kg	
108-88-3	Toluene	ND	1.2	0.13	ug/kg	
1330-20-7	Xylene (total)	46.0	1.2	0.17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-130%
17060-07-0	1,2-Dichloroethane-D4	95%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	95%		66-132%



ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest LabLink@723561 11:15 08-Apr-2013

Report of Analysis

Page 1 of 1

Client Sample ID: AREAD-14BOT
Lab Sample ID: JB30252-1R
Matrix: SO - Soil
Method: SW846-8015C (DAI)
Project: BMSMC, Building 5 Area, PR

Date Sampled: 03/01/13
Date Received: 03/02/13
Percent Solids: 74.6

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GH92252.D	1	03/20/13	XPL	n/a	n/a	GGH4267
Run #2							

	Initial Weight
Run #1	5.2 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0	Isopropyl Alcohol	ND J	130	60	ug/kg	
67-56-1	Methanol	1670 J	260	61	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	88%		58-133%
111-27-3	Hexanol	75%		58-133%

(a) Sample analyzed outside the holding time per client's request.



ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@720494 09:59 25-Mar-2013

Report of Analysis

Page 1 of 1

Client Sample ID:	AREAD-15 BOT	Date Sampled:	03/02/13
Lab Sample ID:	JB30345-1	Date Received:	03/05/13
Matrix:	SO - Soil	Percent Solids:	80.4
Method:	SW846 8260B SW846 5035		
Project:	BMSMC, Building 5 Area, PR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A192525.D	1	03/12/13	OTR	03/05/13 13:00	n/a	VA7250
Run #2							

Run #	Initial Weight
Run #1	5.3 g
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	66.1 J	12	2.0	ug/kg	
71-43-2	Benzene	0.78	1.2	0.14	ug/kg	J
100-41-4	Ethylbenzene	3.3	1.2	0.31	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	42.9	5.9	0.88	ug/kg	
108-88-3	Toluene	ND	1.2	0.12	ug/kg	
1330-20-7	Xylene (total)	11.8	1.2	0.16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		70-130%
17060-07-0	1,2-Dichloroethane-D4	90%		70-122%
2037-26-5	Toluene-D8	109%		81-127%
460-00-4	4-Bromofluorobenzene	108%		66-133%



ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest LabLink@723561 11:15 08-Apr-2013

Report of Analysis

Page 1 of 1

Client Sample ID: AREAD-15 BOT
 Lab Sample ID: JB30345-1R
 Matrix: SO - Soil
 Method: SW846-8015C (DAI)
 Project: BSMC, Building 5 Area, PR

Date Sampled: 03/02/13
 Date Received: 03/05/13
 Percent Solids: 80.4

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	GH92251.D	1	03/20/13	XPL	n/a	n/a	GGH4267
Run #2							

	Initial Weight
Run #1	5.3 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0	Isopropyl Alcohol	ND J	120	55	ug/kg	
67-56-1	Methanol	ND J	230	56	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	93%		58-133%
111-27-3	Hexanol	71%		58-133%

(a) Sample analyzed outside the holding time per client's request.



ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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FED-EX Tracking #
794825718260
Accident Code #

Bottle Order Control ■

Accident Job # TR29717

[illegible]**JB29717R: Chain of Custody**

Page 1 of 4



PAGE ____ OF ____

FED. EX Tracking # 794839107699	Bottle Order Control #
Account Control #	Account Job # JB 30082

Client / Reporting Information				Project Information				Requested Analysis (see TEST CODE sheet)												Matrix Codes									
Company Name AMAI				Project Name: BMS Bldg S Ave E 1CM																DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Waste FB-Fed Blank EB-Equipment Blank RB- Rinse Blank TS-Trip Blank									
Street Address 110 Corporate Park Dr				Street White Plains, NY 10604				Billing Information (if different from Report to) Company Name Street Address City State Zip																					
Project Contact Terry Taylor ttaylor@amiconiut.com				Project # Client Purchase Order #				City State Zip																					
Phone # 914-391-1225				Fax #				City State Zip																					
Samples (s) Name(s)				Phone #				Project Manager				Attention:																	
Acquire Sample #		Field ID / Point of Collection		MECH USE Val #		Date		Time		Sampled by		Matrix		# of Bottles		Number of preserved Bottles												LAB USE ONLY	
																HCl NOIR NHOS NHOS4 NONE DI Water MECH ENCORE													
1		AREAE-9 BOT		A		2/22/13		1730		SO		4				X												H2 T6	
		AREAE-12 BOT		A		2/28/13		1015		SO		4				X												14 I6	
2		AREAE-12 BMS		A		2/28/13		1015		SO		4				X												4944	
		AREAE-12 BMS D		A		2/28/13		1015		SO		4				X													
3		AREAE-13 BOT		A		2/28/13		1155		SO		4				X													
Turnaround Time (Business days)				Data Deliverable Information				Comments / Special Instructions																					
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other				Approved By (Account Mgr) / Date: _____				<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input checked="" type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C"				<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input type="checkbox"/> EDO Format <input type="checkbox"/> Other				USE AREAE-12 BMS and AREAE-12 BMS D for MS/MSD samples 3 ENCLOS 1 9 ENCLOS @ 2/1/13													
Emergency & Rush / I/A data available via Lablink				Sample Custody must be documented below each time samples change possession, including courier delivery.																									
Relinquished to:		Date Time:		Received By:		Date Time:		Relinquished to:		Date Time:		Received By:		Date Time:		Relinquished By: 2 Relinquished By: 4 Custody Seal # 110 <input checked="" type="checkbox"/> In tact <input type="checkbox"/> Not intact Preserved where applicable On Ice Cooler Temp. 4.08													
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished by:		Date Time:		Received By:		Date Time:															

2A

4.00
IR/100

Page 1 of 3

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Client / Reporting Information Company Name: AMAZ Street Address: 110 Corporate Park Dr City: White Plains NY 10604 Project Contact: Terry Taylor; taylor@amaiconsult.com Phone #: 914-251-0400 Sampler(s) Name(s): Nespor M. Rivera		Project Information Project Name: BMS - Building 5 Area D ICM Billing Information (if different from Report to): Company Name: Street Address: City: State: Zip:		Requested Analysis (see TEST CODE sheet) Matrix Codes: DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank	
Field ID / Point of Collection Field ID: AREAD - 14 BOT Date: 3/1/13 Time: 1625		Collection Matrix: NH2 # of bottles: 4 Number of preserved bottles: DC INCH PNO3 PNO4 PNO5 DI WALK MECH ENCORE		LAB USE ONLY H3T6 14K3 4953	
Turnaround Time (Business days): <input type="checkbox"/> Std. 15 Business Days <input checked="" type="checkbox"/> Std. 10 Business Days (by Contract only) <input type="checkbox"/> 10 Day RUSH <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush TIA data available VIA Lablink		Approved By (Accutest PM): / Date: <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input checked="" type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" Commercial "A" - Results Only Commercial "B" - Results + QC Summary NJ Reduced - Results + QC Summary + Partial Raw data		Comments / Special Instructions: • 3 ENCORES D.B. 3/2/13	
Relinquished by Sampler: Nespor M. Rivera Date/Time: 3/1/13 1715		Received By: Fed Ex Date/Time: 3/2/13 958		Relinquished by Sampler: Date/Time: Received By: Date/Time:	
Relinquished by: Date/Time:		Received By: Date/Time:		Relinquished by: Date/Time:	
Relinquished by: Date/Time:		Received By: Date/Time:		Relinquished by: Date/Time:	
Relinquished by: Date/Time:		Received By: Date/Time:		Relinquished by: Date/Time:	

1A

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On ice: ☒ Cooler Temp: **7.6 7.5C**



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PN

[illegible]

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DATA REVIEW WORKSHEETS

Project Number: JB29717

Date: 02/23 + 25/2013

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8260B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JB29717 Sample matrix: Soil

No. of Samples: 3

Trip blank No.: -

Field blank No.: -

Equipment blank No.: -

Field duplicate No.: -

☒ Data Completeness
☒ Holding Times
☒ GC/MS Tuning
☒ Internal Standard Performance
☒ Blanks
☒ Surrogate Recoveries
☒ Matrix Spike/Matrix Spike Duplicate

☒ Laboratory Control Spikes
☒ Field Duplicates
☒ Calibrations
☒ Compound Identifications
☒ Compound Quantitation
☒ Quantitation Limits

Overall Comments: Selected VOC's by SW846-8260B

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated non-detect

Reviewer: 

Date: 04/14/2013

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION

DATE LAB. CONTACTEDDATE RECEIVED[illegible]

DATA REVIEW WORKSHEETS

All criteria were met ☒ X
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
Sample analyzed within method recommended holding time.				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples ($\text{pH} \leq 2$, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C , no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: $4 \pm 2^{\circ}\text{C}$): 4°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ).

If the % solid of soil samples is $< 10\%$, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted ($> 10^{\circ}\text{C}$), estimate positive results (J) and nondetects (UJ).

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

 X The BFB performance results were reviewed and found to be within the specified criteria.

 X BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected:

If mass calibration is in error, all associated data are rejected.

DATA REVIEW WORKSHEETS

All criteria were met ☒ X
 Criteria were not met
 and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: _____ 02/11/13 _____ 03/06/13 _____ 01/07/13
 Dates of continuing calibration: _____ 03/04/13 _____ 03/07/13 _____ 03/05/13
 Instrument ID numbers: _____ GCMSD _____ GCMSX _____ GCMSY
 Matrix/Level: _____ Aqueous/low _____

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and continuing calibration meet method specific criteria					

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995 , estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

DATA REVIEW WORKSHEETS

All criteria were met ___N/A___
 Criteria were not met
 and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
All method blank meets method specific criteria				

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No field/equipment/trip blanks analyzed with this data package.				

DATA REVIEW WORKSHEETS

All criteria were met __N/A__
 Criteria were not met
 and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND				ACTION
	1,2-DCA	DBFM	TOL-d8	BFB	

All surrogate recoveries within laboratory control limits

QC Limits* (Aqueous)

____ LL to UL ____ to ____ to ____ to ____ to

QC Limits* (Solid-Low)

____ LL to UL ____ to ____ to ____ to ____ to

QC Limits* (Solid-Med)

____ LL to UL ____ to ____ to ____ to ____ to

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If anyone surrogate in a fraction shows < 10 % recovery.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JB30582-38MS/-38MSD				Matrix/Level: Soil	
Sample ID: JB30041-2MS/-2MSD				Matrix/Level: Soil	
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
JB30041-2MS/-2MSD					
MS	Acetone	4		10 - 198	No action
		-9			
JB30181-14MS/-14MSD					
MSD	Acetone	218	43	10 -198/35	No action
MS/MSD	MIBK		34	22	No action

Note: JB30041-2MS/2MSD – no action due to high sample concentration relative to amount spiked.

JB30181-14MS/14MSD – no action due to high sample concentration

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
----------	-----------------	----------	-----------	-------	--------

[illegible]

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met X
 Criteria were not met
 and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD?
 Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
--------	----------	-----	----------

Recoveries within laboratory control limits.

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

DATA REVIEW WORKSHEETS

All criteria were met ____ N/A ____
 Criteria were not met
 and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs: ____ - _____

Matrix: ____ - _____

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field duplicate analyzed with this data package. Laboratory duplicate used to assess precision..					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs: JB30586-36/-36DUP

Matrix: Soil

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Toluene	0.12	ND	0.31	200	No action; low concentration of hit

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
------	-----------	--------	---------	------------------	--------

Internal standard area within laboratory control limits

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB29717-2

MIBK

RF = 0.156

$$[] = (3127)(50)/(307415)(0.156)$$

$$= 3.26 \text{ ppb OK}$$

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

[illegible]

B. Percent Solids

List samples which have $\leq 50\%$ solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is $< 10\%$, estimate positive results (J) and reject nondetects (R)

DATA REVIEW WORKSHEETS

Project Number: JB29717
Date: 02/23-25/2013

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JB29717 Sample matrix: Soil
No. of Samples: 3

Trip blank No.: -
Field blank No.: -
Equipment blank No.: -
Field duplicate No.: -

<input checked="" type="checkbox"/> Data Completeness	<input checked="" type="checkbox"/> Laboratory Control Spikes
<input checked="" type="checkbox"/> Holding Times	<input checked="" type="checkbox"/> Field Duplicates
<input type="checkbox"/> GC/MS Tuning	<input checked="" type="checkbox"/> Calibrations
<input type="checkbox"/> Internal Standard Performance	<input checked="" type="checkbox"/> Compound Identifications
<input checked="" type="checkbox"/> Blanks	<input checked="" type="checkbox"/> Compound Quantitation
<input checked="" type="checkbox"/> Surrogate Recoveries	<input checked="" type="checkbox"/> Quantitation Limits
<input checked="" type="checkbox"/> Matrix Spike/Matrix Spike Duplicate	

Overall Comments: Selected alcohols (methanol and isopropyl alcohol) by SW846-8015C
(DAI)

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer: Rafael Defant
Date: 04/14/2013

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
JB29717-1R	02/23/13	03/20/13	-	Estimate positive results (J) and reject nondetects (R)
JB29717-2R	02/23/13	03/20/13	-	
JB29717-3R	02/25/13	03/20/13	-	

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH ≤ 2, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): 4°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

All criteria were met N/A
 Criteria were not met see below

GC/MS TUNING

N/A The BFB performance results were reviewed and found to be within the specified criteria.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected:

If mass calibration is in error, all associated data are rejected.

DATA REVIEW WORKSHEETS

All criteria were met ☒ X
 Criteria were not met
 and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: 09/24/12

Dates of continuing calibration: 03/20/13

Instrument ID numbers: GCGH

Matrix/Level: Aqueous/medium

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and continuing calibration meets method specific requirements in at least one of the two signals.					

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995 , estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met N/A
Criteria were not met
and/or see below _____

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/MATRIX	COMPOUND	CONCENTRATION UNITS
	All_method_blank_meeth_method_specific_criteria			

[illegible]

All criteria were met NA
Criteria were not met
and/or see below

Blank Actions

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is $<$ sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is > SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met ☒ X
 Criteria were not met
 and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID **SURROGATE COMPOUND** **ACTION**

Hexanol

____All surrogate recoveries and retention times within laboratory control limits____

QC Limits* (Aqueous)

____LL to UL____ to____ to____ to____ to____

QC Limits* (Solid-Low)

____LL to UL____ to____ to____ to____ to____

QC Limits* (Solid-Med)

____LL to UL____ to____ to____ to____ to____

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met X
 Criteria were not met
 and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit:

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JB300832-2RMS/-2RMSD Matrix/Level: Soil

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
-----------	----------	-----	-----	-----------	--------

MS/MSD recoveries and RPD within laboratory control limits

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (JJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met X
Criteria were not met
and/or see below

MS/MSD – Unspiked Compounds

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

[illegible]

* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met X
 Criteria were not met
 and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD?
 Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
<u>Recoveries within laboratory control limits</u>			

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met X
 Criteria were not met
 and/or see below

IX. FIELD DUPLICATE PRECISION

Sample IDs: - Matrix: Soil

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicates analyzed for this data package. MS/MSD RPD used to assess precision. RPD within laboratory and generally acceptable control limits					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

* Area of +100% or -50% of the IS area in the associated calibration standard.

* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

[illegible]

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met _____
and/or see below _____

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB29717-1R

Methanol

RF = 14.32

$$[] = (182078)/(14.32)$$

$$= 12714 \text{ ppb OK}$$

All criteria were met X
Criteria were not met
and/or see below _____

A. Dilution performed

[illegible]

List samples which have $\leq 50\%$ solids

[illegible]

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

DATA REVIEW WORKSHEETS

Project Number: JB30082

Date: 02/27 + 28/2013

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8260B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JB30082 Sample matrix: Soil

No. of Samples: 5

Trip blank No.: -

Field blank No.: -

Equipment blank No.: -

Field duplicate No.: -

<input checked="" type="checkbox"/> Data Completeness	<input checked="" type="checkbox"/> Laboratory Control Spikes
<input checked="" type="checkbox"/> Holding Times	<input checked="" type="checkbox"/> Field Duplicates
<input checked="" type="checkbox"/> GC/MS Tuning	<input checked="" type="checkbox"/> Calibrations
<input checked="" type="checkbox"/> Internal Standard Performance	<input checked="" type="checkbox"/> Compound Identifications
<input checked="" type="checkbox"/> Blanks	<input checked="" type="checkbox"/> Compound Quantitation
<input checked="" type="checkbox"/> Surrogate Recoveries	<input checked="" type="checkbox"/> Quantitation Limits
<input checked="" type="checkbox"/> Matrix Spike/Matrix Spike Duplicate	

Overall Comments: Selected VOC's by SW846-8260B

Definition of Qualifiers:

J- Estimated results
 U- Compound not detected
 R- Rejected data
 UJ- Estimated nondetect

Reviewer: 

Date: 04/14/2013

DATA COMPLETENESS

DATE RECEIVED

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
Sample analyzed within method recommended holding time.				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples ($\text{pH} \leq 2$, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C , no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: $4 \pm 2^{\circ}\text{C}$): 4°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solid of soil samples is $< 10\%$, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted ($> 10^{\circ}\text{C}$), estimate positive results (J) and nondetects (UJ).

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

X The BFB performance results were reviewed and found to be within the specified criteria.

 X BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected:

If mass calibration is in error, all associated data are rejected.

DATA REVIEW WORKSHEETS

All criteria were met ☒
 Criteria were not met
 and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: 02/20/13
 Dates of continuing calibration: 03/08/13 03/11/13
 Instrument ID numbers: GCMSA
 Matrix/Level: Aqueous/low

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
02/08/13	cc-7222-20	-56.1	Acetone	JB30082-1
Results for Acetone rejected (R)				

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995 , estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met NA
Criteria were not met
and/or see below

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
All method blank meet method specific criteria				

[illegible]

All criteria were met N/A
Criteria were not met
and/or see below _____

Blank Actions

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is $<$ sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is > SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

[illegible]

All criteria were met X
 Criteria were not met
 and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND				ACTION
	1,2-DCA	DBFM	TOL-d8	BFB	

 All surrogate recoveries within laboratory control limits

QC Limits* (Aqueous)

 LL to UL to to to to

QC Limits* (Solid-Low)

 LL to UL to to to to

QC Limits* (Solid-Med)

 LL to UL to to to to

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If anyone surrogate in a fraction shows < 10 % recovery.

All criteria were met X
 Criteria were not met
 and/or see below

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JB30109-9MS/-9MSD				Matrix/Level: Soil	
Sample ID: JB30082-2MS/-2MSD				Matrix/Level: Soil	
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
JB30109-9MS/-9MSD					
MS	Acetone	-8		10 - 198	No action
MSD		1			
JB30082-2MS/-2MSD					
MS	Acetone	-43	46	10 - 198/35	No action
MSD		-148			

Note: JB30082-2MS/-2MSD – no action due to high sample concentration relative to amount spiked.

JB30109-9MS/9MSD – no action due to matrix interferences

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met X
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

[illegible]

Actions:

- * If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).
* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met X
 Criteria were not met
 and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD?
 Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
Recoveries within laboratory control limits. _____			

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met ____ N/A ____
 Criteria were not met ____
 and/or see below ____

IX. FIELD DUPLICATE PRECISION

Sample IDs: ____ - ____

Matrix: ____ - ____

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicate analyzed with this data package. Laboratory duplicate used to assess precision..					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met X
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
------	-----------	--------	---------	------------------	--------

Internal standard area within laboratory control limits

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met _____
and/or see below _____

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB30082-1

Ethylbenzene

RF = 1.309

$$[] = (213134)(50)/(278855)(1.309)$$

$$= 29.2 \text{ ppb OK}$$

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

[illegible]

B. Percent Solids

List samples which have $\leq 50\%$ solids

[illegible]

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

DATA REVIEW WORKSHEETS

Project Number: JB30082r

Date: 02/27 +28/2013

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JB30082 Sample matrix: Soil

No. of Samples: 5

Trip blank No.: -

Field blank No.: -

Equipment blank No.: -

Field duplicate No.: -

<input checked="" type="checkbox"/> Data Completeness	<input checked="" type="checkbox"/> Laboratory Control Spikes
<input checked="" type="checkbox"/> Holding Times	<input checked="" type="checkbox"/> Field Duplicates
<input type="checkbox"/> N/A GC/MS Tuning	<input checked="" type="checkbox"/> Calibrations
<input type="checkbox"/> N/A Internal Standard Performance	<input checked="" type="checkbox"/> Compound Identifications
<input checked="" type="checkbox"/> Blanks	<input checked="" type="checkbox"/> Compound Quantitation
<input checked="" type="checkbox"/> Surrogate Recoveries	<input checked="" type="checkbox"/> Quantitation Limits
<input checked="" type="checkbox"/> Matrix Spike/Matrix Spike Duplicate	

Overall Comments: Selected alcohols (methanol and isopropyl alcohol) by SW846-8015C
(DAI)

Definition of Qualifiers:

J- Estimated results
 U- Compound not detected
 R- Rejected data
 UJ- Estimated nondetect

Reviewer: Rafael Dufan

Date: 04/14/2013

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION

DATE LAB. CONTACTED

DATE RECEIVED

This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
JB30082-1R	02/27/13	03/20/13	-	Estimate positive results (J) and nondetects (J)
JB30082-2R	02/28/13	03/20/13	-	
JB30082-3R	02/28/13	03/20/13	-	
JB30082-2RMSD	02/28/13	03/20/13	-	
JB30082-2RMS	02/28/13	03/20/13	-	

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH ≤ 2, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): 4°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

DATA REVIEW WORKSHEETS

All criteria were met N/A
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

N/A The BFB performance results were reviewed and found to be within the specified criteria.

N/A BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected:

If mass calibration is in error, all associated data are rejected.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: 09/24/12

Dates of continuing calibration: 03/20/13

Instrument ID numbers: GCGH

Matrix/Level: Aqueous/medium

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and continuing calibration meets method specific requirements in at least one of the two signals.					

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has $r > 0.995$, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

DATA REVIEW WORKSHEETS

All criteria were met N/A
Criteria were not met
and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/MATRIX	COMPOUND	CONCENTRATION UNITS
		All_method_blank_meeth_method_specific_criteria		

Field/Equipment/Trip blank

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met __N/A__
 Criteria were not met
 and/or see below ____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and $>$ AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND	ACTION
Hexanol		

 All surrogate recoveries and retention times within laboratory control limits

QC Limits* (Aqueous)

_____ LL to UL _____ to _____ to _____ to _____ to _____

QC Limits* (Solid-Low)

_____ LL to UL _____ to _____ to _____ to _____ to _____

QC Limits* (Solid-Med)

_____ LL to UL _____ to _____ to _____ to _____ to _____

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met X
 Criteria were not met
 and/or see below

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JB300832-2RMS/-2RMSD Matrix/Level: Soil

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
-----------	----------	-----	-----	-----------	--------

MS/MSD recoveries and RPD within laboratory control limits

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met X
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

[illegible]

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD?
 Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
<u>Recoveries within laboratory control limits</u>			

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

IX. FIELD DUPLICATE PRECISION

Sample IDs: -

Matrix: Soil

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicates analyzed for this data package. MS/MSD RPD used to assess precision. RPD within laboratory and generally acceptable control limits					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met N/A
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
------	-----------	--------	---------	------------------	--------

[illegible]

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB30082-3R

Methanol RF = 14.32

$$[] = (11023)/(14.32)$$

$$= 769.6 \text{ ppb OK}$$

Note: JB30082-3R for Methanol: More than 40 % RPD for detected concentrations between the two GC columns.

JB30082-1R for Methanol: More than 40 % RPD for detected concentrations between the two GC columns

Results for Methanol qualified.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

B. Percent Solids

List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

DATA REVIEW WORKSHEETS

Project Number: JB30252
Date: 03/01/2013

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8260B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JB30252 Sample matrix: Soil
No. of Samples: 1

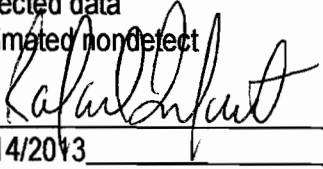
Trip blank No.: -
Field blank No.: -
Equipment blank No.: -
Field duplicate No.: -

<input checked="" type="checkbox"/> Data Completeness	<input checked="" type="checkbox"/> Laboratory Control Spikes
<input checked="" type="checkbox"/> Holding Times	<input checked="" type="checkbox"/> Field Duplicates
<input checked="" type="checkbox"/> GC/MS Tuning	<input checked="" type="checkbox"/> Calibrations
<input checked="" type="checkbox"/> Internal Standard Performance	<input checked="" type="checkbox"/> Compound Identifications
<input checked="" type="checkbox"/> Blanks	<input checked="" type="checkbox"/> Compound Quantitation
<input checked="" type="checkbox"/> Surrogate Recoveries	<input checked="" type="checkbox"/> Quantitation Limits
<input checked="" type="checkbox"/> Matrix Spike/Matrix Spike Duplicate	

Overall Comments: Selected VOC's by SW846-8260B

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated non-detect

Reviewer: 
Date: 04/14/2013

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION

DATE LAB. CONTACTED

DATE RECEIVED

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
Sample analyzed within method recommended holding time.				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples ($\text{pH} \leq 2$, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C , no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: $4 \pm 2^{\circ}\text{C}$): 3.5°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solid of soil samples is $< 10\%$, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted ($> 10^{\circ}\text{C}$), estimate positive results (J) and nondetects (UJ).

DATA REVIEW WORKSHEETS

All criteria were met ☒ X
Criteria were not met see below ☐ _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

☒ X The BFB performance results were reviewed and found to be within the specified criteria.

☒ X BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List _____ the _____ samples _____ affected:

If mass calibration is in error, all associated data are rejected.

DATA REVIEW WORKSHEETS

All criteria were met ☒
 Criteria were not met ☐
 and/or see below ☐

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: 01/07/13
 Dates of continuing calibration: 03/12/13
 Instrument ID numbers: GCMSY
 Matrix/Level: Aqueous/low

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and continuing calibration meet method specific requirements					

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995 , estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

DATA REVIEW WORKSHEETS

All criteria were met N/A
Criteria were not met
and/or see below

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/MATRIX	COMPOUND	CONCENTRATION UNITS
		All_method_blank_meet_method_specific_criteria		

Field/Equipment/Trip blank

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met ___N/A___
 Criteria were not met
 and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and $>$ AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met X
 Criteria were not met
 and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND			ACTION
	1,2-DCA	DBFM	TOL-d8	

 All surrogate recoveries within laboratory control limits except for QC sample:

<u> JB30950-2MS/-2MSD </u>	<u> 47/50 </u>	<u> No action </u>

Note: no action; qc sample.

QC Limits* (Aqueous)

 LL to UL to to to to

QC Limits* (Solid-Low)

 LL to UL to 70 to 130 to to

QC Limits* (Solid-Med)

 LL to UL to to to to

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If anyone surrogate in a fraction shows < 10 % recovery.

All criteria were met X
 Criteria were not met
 and/or see below

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JB30950-2MS/-2MSD Matrix/Level: Soil

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
<u>MS</u>	<u>Acetone</u>	<u>291</u>		<u>10 - 198</u>	<u>Qualify_results</u>
<u>MSD</u>		<u>268</u>			

Note: Results for Acetone in JB30252-1 qualified as estimated (J).

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (JJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
----------	-----------------	----------	-----------	-------	--------

[illegible]

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met X
 Criteria were not met
 and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD?
 Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
--------	----------	-----	----------

Recoveries within laboratory control limits.

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (J) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met ____ N/A ____
 Criteria were not met
 and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs: ____ - _____

Matrix: ____ - _____

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicate analyzed with this data package. MS/MSD recoveries RPD used to assess precision. RPD within laboratory control limits					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met X
Criteria were not met
and/or see below _____

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

* Area of +100% or -50% of the IS area in the associated calibration standard.

* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

Internal standard area within laboratory control limits

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

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DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB30252-1

Acetone

RF = 0.032

$$[] = (2995)(50)/(137213)(0.032)$$

$$= 34.1 \text{ ppb OK}$$

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

B. Percent Solids

List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

DATA REVIEW WORKSHEETS

Project Number: JB30252r

Date: 03/01/2013

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JB30252r Sample matrix: Soil

No. of Samples: 1

Trip blank No.: -

Field blank No.: -

Equipment blank No.: -

Field duplicate No.: -

<input checked="" type="checkbox"/> Data Completeness	<input checked="" type="checkbox"/> Laboratory Control Spikes
<input checked="" type="checkbox"/> Holding Times	<input checked="" type="checkbox"/> Field Duplicates
<input type="checkbox"/> N/A GC/MS Tuning	<input checked="" type="checkbox"/> Calibrations
<input type="checkbox"/> N/A Internal Standard Performance	<input checked="" type="checkbox"/> Compound Identifications
<input checked="" type="checkbox"/> Blanks	<input checked="" type="checkbox"/> Compound Quantitation
<input checked="" type="checkbox"/> Surrogate Recoveries	<input checked="" type="checkbox"/> Quantitation Limits
<input checked="" type="checkbox"/> Matrix Spike/Matrix Spike Duplicate	

Overall Comments: Selected alcohols (methanol and isopropyl alcohol) by SW846-8015C
(DAI)

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer: Rafael Delacruz

Date: 04/15/2013

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION

DATE LAB. CONTACTED

DATE RECEIVED

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met _____
 Criteria were not met _____
 and/or see below X

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
JB30252r-1R	03/01/13	03/20/13	-	Estimate positive results (J) and nondetects (J)
			-	
			-	
			-	
			-	

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH ≤ 2, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): 3.5°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

DATA REVIEW WORKSHEETS

All criteria were met __N/A__
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

__N/A_ The BFB performance results were reviewed and found to be within the specified criteria.

__N/A_ BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected:

If mass calibration is in error, all associated data are rejected.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: 09/24/12

Dates of continuing calibration: 03/20/13

Instrument ID numbers: GCGH

Matrix/Level: Aqueous/medium

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and continuing calibration meets method specific requirements in at least one of the two signals.					

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995 , estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

DATA REVIEW WORKSHEETS

All criteria were met __N/A__
 Criteria were not met
 and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
All method blank meeth method specific criteria				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_____	_____	_____	_____	_____
No field/trip/equipment blanks analyzed with this data package.				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

DATA REVIEW WORKSHEETS

All criteria were met NA
Criteria were not met
and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is > SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

[illegible]

All criteria were met X
 Criteria were not met
 and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND	ACTION
	Hexanol	

 All surrogate recoveries and retention times within laboratory control limits

QC Limits* (Aqueous)

_____ LL to UL _____ to _____ to _____ to _____ to _____

QC Limits* (Solid-Low)

_____ LL to UL _____ to _____ to _____ to _____ to _____

QC Limits* (Solid-Med)

_____ LL to UL _____ to _____ to _____ to _____ to _____

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met X
 Criteria were not met
 and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JB30082-2RMS/-2RMSD Matrix/Level: Soil

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
-----------	----------	-----	-----	-----------	--------

MS/MSD recoveries and RPD within laboratory control limits

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (JJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

[illegible]

Actions:

- * If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).
* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met X
 Criteria were not met
 and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD?
 Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
<u>Recoveries within laboratory control limits</u>			

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met X
 Criteria were not met
 and/or see below

IX. FIELD DUPLICATE PRECISION

Sample IDs: - Matrix: Soil

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicates analyzed for this data package. MS/MSD RPD used to assess precision. RPD within laboratory and generally acceptable control limits					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met N/A
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
------	-----------	--------	---------	------------------	--------

[illegible]

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB30252r-1R

Methanol

RF = 14.32

$$[] = (18504)/(14.32)$$

$$= 1292 \text{ ppb OK}$$

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

[illegible]

B. Percent Solids

List samples which have $\leq 50\%$ solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

DATA REVIEW WORKSHEETS

Project Number: JB30345

Date: 03/01/2013

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8260B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JB30345 Sample matrix: Soil

No. of Samples: 1

Trip blank No.: -

Field blank No.: -

Equipment blank No.: -

Field duplicate No.: -

<input checked="" type="checkbox"/> Data Completeness	<input checked="" type="checkbox"/> Laboratory Control Spikes
<input checked="" type="checkbox"/> Holding Times	<input checked="" type="checkbox"/> Field Duplicates
<input checked="" type="checkbox"/> GC/MS Tuning	<input checked="" type="checkbox"/> Calibrations
<input checked="" type="checkbox"/> Internal Standard Performance	<input checked="" type="checkbox"/> Compound Identifications
<input checked="" type="checkbox"/> Blanks	<input checked="" type="checkbox"/> Compound Quantitation
<input checked="" type="checkbox"/> Surrogate Recoveries	<input checked="" type="checkbox"/> Quantitation Limits
<input checked="" type="checkbox"/> Matrix Spike/Matrix Spike Duplicate	

Overall Comments: Selected VOC's by SW846-8260B

Definition of Qualifiers:

J- Estimated results
 U- Compound not detected
 R- Rejected data
 UJ- Estimated non-detect

Reviewer: *Rafael Delant*

Date: 04/15/2013

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION

DATE LAB. CONTACTED

DATE RECEIVED

[illegible]

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
Sample analyzed within method recommended holding time.				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples ($\text{pH} \leq 2$, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C , no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: $4 \pm 2^{\circ}\text{C}$): 2.5°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solid of soil samples is $< 10\%$, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted ($> 10^{\circ}\text{C}$), estimate positive results (J) and nondetects (UJ).

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

X The BFB performance results were reviewed and found to be within the specified criteria.

 X BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected:

If mass calibration is in error, all associated data are rejected.

DATA REVIEW WORKSHEETS

All criteria were met ☒
 Criteria were not met
 and/or see below ☒

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: 02/20/13 02/22/13
 Dates of continuing calibration: 03/12/13 03/12/13
 Instrument ID numbers: GCMSA GCMSE
 Matrix/Level: Aqueous/low

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
GCMSA					
03/12/13	cc7222-20		-20.7	Acetone	JB30345-1

Note: Result for acetone qualified as estimated (J) in affected sample.

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995 , estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

DATA REVIEW WORKSHEETS

All criteria were met N/A
 Criteria were not met
 and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/MATRIX	COMPOUND	CONCENTRATION UNITS
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
All method blank meet method specific criteria				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/MATRIX	COMPOUND	CONCENTRATION UNITS
No field/equipment/trip blanks analyzed with this data package.				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

DATA REVIEW WORKSHEETS

All criteria were met NA
 Criteria were not met
 and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and $>$ AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met X
 Criteria were not met
 and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND			ACTION
	1,2-DCA	DBFM	TOL-d8	

 All surrogate recoveries within laboratory control limits

Note: no action; qc sample.

QC Limits* (Aqueous)

 LL to UL to to to

QC Limits* (Solid-Low)

 LL to UL to 70 to 130 to to

QC Limits* (Solid-Med)

 LL to UL to to to

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If anyone surrogate in a fraction shows < 10 % recovery.

All criteria were met X
 Criteria were not met
 and/or see below

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JB30917-2MS/-2MSD Matrix/Level: Soil

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
-----------	----------	-----	-----	-----------	--------

_MS/MSD_recoveries_and_RPD_within_laboratory_control_limits_

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met X
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
----------	-----------------	----------	-----------	-------	--------

Blank lined paper for writing.

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met X
 Criteria were not met
 and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD?
 Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
Recoveries within laboratory control limits.			

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (J) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

DATA REVIEW WORKSHEETS

All criteria were met ____ N/A ____
 Criteria were not met
 and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs: _ - _____

Matrix: _____ - _____

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicate analyzed with this data package. MS/MSD recoveries RPD used to assess precision. RPD within laboratory control limits					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met X
Criteria were not met
and/or see below _____

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

* Area of +100% or -50% of the IS area in the associated calibration standard.

* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

Internal standard area within laboratory control limits

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

- 13

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB30345-1

Acetone

RF = 0.082

$$[] = (17560)(50)/(189870)(0.082)$$

$$= 56.37 \text{ ppb OK}$$

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

[illegible]

B. Percent Solids

List samples which have $\leq 50\%$ solids

[illegible]

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

DATA REVIEW WORKSHEETS

Project Number: JB30345r

Date: 03/02/2013

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Accutest data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: JB30345r Sample matrix: Soil

No. of Samples: 1

Trip blank No.: -

Field blank No.: -

Equipment blank No.: -

Field duplicate No.: -

<input checked="" type="checkbox"/> Data Completeness	<input checked="" type="checkbox"/> Laboratory Control Spikes
<input checked="" type="checkbox"/> Holding Times	<input checked="" type="checkbox"/> Field Duplicates
<input type="checkbox"/> N/A GC/MS Tuning	<input checked="" type="checkbox"/> Calibrations
<input type="checkbox"/> N/A Internal Standard Performance	<input checked="" type="checkbox"/> Compound Identifications
<input checked="" type="checkbox"/> Blanks	<input checked="" type="checkbox"/> Compound Quantitation
<input checked="" type="checkbox"/> Surrogate Recoveries	<input checked="" type="checkbox"/> Quantitation Limits
<input checked="" type="checkbox"/> Matrix Spike/Matrix Spike Duplicate	

Overall Comments: Selected alcohols (methanol and isopropyl alcohol) by SW846-8015C
(DAI)

Definition of Qualifiers:

J- Estimated results
 U- Compound not detected
 R- Rejected data
 UJ- Estimated non-detect

Reviewer: Rafael Difant

Date: 04/15/2013

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION

DATE LAB. CONTACTED

DATE RECEIVED

Blank lined paper for writing.

DATA REVIEW WORKSHEETS

All criteria were met _____
 Criteria were not met _____
 and/or see below X

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
JB30345r-1R	03/02/13	03/20/13	-	Estimate positive results (J) and nondetects (J)
			-	
			-	
			-	
			-	

Criteria

Aqueous samples – 14 days from sample collection for preserved samples ($\text{pH} \leq 2$, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C , no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: $4 \pm 2^{\circ}\text{C}$): 3.5°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ).

If the % solid of soil samples is $< 10\%$, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted ($> 10^{\circ}\text{C}$), estimate positive results (J) and nondetects (UJ).

DATA REVIEW WORKSHEETS

All criteria were met ___N/A___
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

___N/A_ The BFB performance results were reviewed and found to be within the specified criteria.

___N/A_ BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List _____ the _____ samples _____ affected:

If mass calibration is in error, all associated data are rejected.

DATA REVIEW WORKSHEETS

All criteria were met X
 Criteria were not met
 and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: 09/24/12

Dates of continuing calibration: 03/20/13

Instrument ID numbers: GCGH

Matrix/Level: Aqueous/medium

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and continuing calibration meets method specific requirements in at least one of the two signals.					

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995 , estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

DATA REVIEW WORKSHEETS

All criteria were met ___N/A___
 Criteria were not met
 and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

DATA REVIEW WORKSHEETS

All criteria were met ___N/A___
 Criteria were not met
 and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and $>$ AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met X
 Criteria were not met
 and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND	ACTION
Hexanol		

All surrogate recoveries and retention times within laboratory control limits

QC Limits* (Aqueous)

 LL to UL to to to to

QC Limits* (Solid-Low)

 LL to UL to to to to

QC Limits* (Solid-Med)

 LL to UL to to to to

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met X
 Criteria were not met
 and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: JB30082-2RMS/-2RMSD Matrix/Level: Soil

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
-----------	----------	-----	-----	-----------	--------

MS/MSD recoveries and RPD within laboratory control limits

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (JJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
----------	-----------------	----------	-----------	-------	--------

1. Introduction
 2. Background
 3. Methodology
 4. Results
 5. Discussion
 6. Conclusion
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Actions:

- * If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).
* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met X
 Criteria were not met
 and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD?
 Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
<u>Recoveries within laboratory control limits</u>			

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met X
 Criteria were not met
 and/or see below

IX. FIELD DUPLICATE PRECISION

Sample IDs: - Matrix: Soil

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicates analyzed for this data package. MS/MSD RPD used to assess precision. RPD within laboratory and generally acceptable control limits					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met N/A
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
------	-----------	--------	---------	------------------	--------

[illegible]

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB30345-1R

Hexanol

RF = 106.5

$$[] = (379126)/(106.5)$$

$$= 3560 \text{ ppb OK}$$

DATA REVIEW WORKSHEETS

All criteria were met X
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

[illegible]

B. Percent Solids

List samples which have $\leq 50\%$ solids

[illegible]

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)